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강연제목: Using distorted images for image recovery through random media

Abstract: The biggest obstacle for high resolution *in-vivo* deep tissue imaging is the aberrations and multiple scattering related with the heterogeneous structure of biological tissue. As the inhomogeneity is random in nature, it is impossible to correct these wavefront distortions with prior knowledge. Therefore, to overcome this issue, wavefront shaping has risen as a prospective approach to cancel the wavefront distortions and enable high resolution imaging even inside deep tissue. However, the associated hardware and the need to measure the aberrations before correction not only makes the imaging system complex but also sacrifices the precious photon budget and kills the temporal resolution. Here, we describe a computational approach to image through dynamic turbid media based on the principles of speckle interferometry. There is no need for additional hardware and a new computational method is developed to speed up the calculation process bringing real time imaging into reach.

Brief Biosketch

Jung-Hoon received his Ph.D in Physics at KAIST and is currently an Associate Professor at the Department of Biomedical Engineering at UNIST. His research interests focus on building novel optical systems and computational methods to enable high resolution, high speed deep tissue imaging, especially for the brain.